

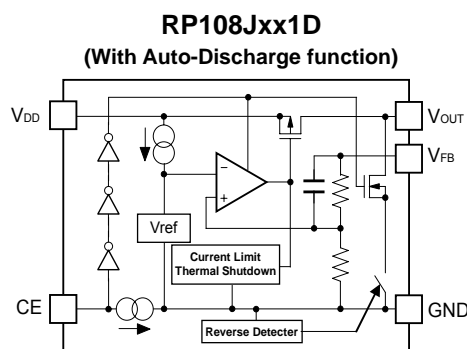
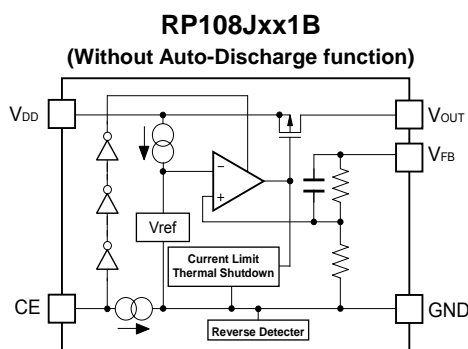
Low Voltage 3A LDO Regulator with Ext. VOUT Adjustable

The RP108J Series are CMOS-based LDO regulators featuring 1A output with low on-resistance. The CMOS process provides both large output current and low supply current. The dropout voltage is significantly lower than bipolar regulators. The RP108J handles low voltage with an input voltage from 1.6V and an output voltage from 0.8V. Accordingly, the device supports highly integrated, low voltage-driven LSI as a rear stage of the DC/DC converter. RP108J081x can set adjustable output voltage with an external resistor. The CE pin can switch the regulator into standby mode. In addition to a fold-back protection circuit built into conventional LDO regulators, RP108J has a thermal shutdown circuit, a reverse current protection circuit and a constant slope circuit. The constant slope circuit is a soft start function to prevent inrush current and mis operation of devices. Ceramic capacitors can be used.

FEATURES

- Supply Current (I_{SS}) Typ. 350 μ A ($I_{OUT}=0$ mA, $V_{IN}=5.25$ V)
 - Standby Current ($I_{standby}$) Typ. 2 μ A
 - Dropout Voltage (V_{DIF}) Typ. 0.51V ($I_{OUT}=3$ A, $V_{OUT}=2.8$ V)
 - Ripple Rejection (RR) Typ. 65dB ($f=1$ kHz)
 - Input Voltage Range1 (V_{IN}) 1.6V to 5.25V
 - Output Voltage Range (V_{OUT}) 0.8V to 4.2V (internally fixed)
0.8V with external resistors
 - Output Voltage Accuracy $\pm 1\%$
 - Temp.coef.of Output Voltage Typ. ± 100 ppm/ $^{\circ}$ C
 - Load Regulation Typ. 0.1%/V
 - Line Regulation Typ. 3mV ($I_{OUT}=3$ A)
 - Fold-back Protection Circuit Current limit Typ. 220mA
 - Reverse current protection Circuit
 - Constant Slope Circuit
 - Thermal Shutdown Circuit Stops at 165 $^{\circ}$ C
 - Auto-Discharge function D Version
 - Package TO-252-5-P2
 - Ceramic capacitors can be used. 10 μ F or more
- (The above shows specification at $T_{opt}=25^{\circ}$ C. Design assurance value at -40° C $\leq T_{opt} \leq 85^{\circ}$ C is also available. For details, please refer to the datasheet.)

BLOCK DIAGRAMS



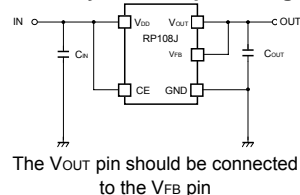
SELECTION GUIDES

Halogen Free	Package	Q'ty per Reel	Part No.
H/F	TO-252-5-P2	5,000 pcs	RP108Jxx1*-T1-FE

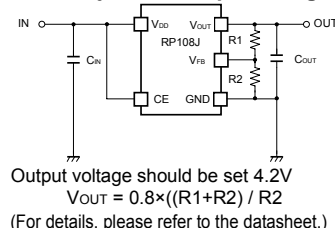
- xx : Specify the output voltage within the range of 0.8V (08) to 4.2V (42) in 0.1V steps.
* : Select from (B) without auto-discharge function or (D) with auto-discharge function

TYPICAL APPLICATION

RP108Jxx1x
Internally fixed output voltage

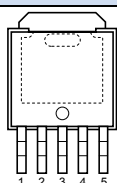


RP108J081x
Ext. adjustable output voltage



PACKAGES

TO-252-5-P2



1	CE	4	VOUT
2	VDD	5	VFB
3	GND		

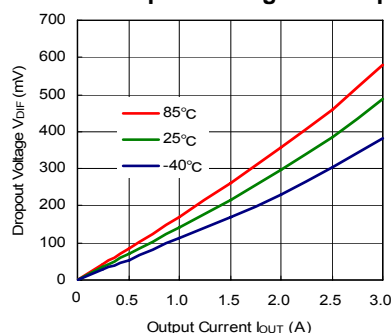
*) The tab is substrate level. (GND)
The VOUT pin should be connected to the VFB pin when the output voltage is fixed inside the IC.

APPLICATIONS

- Power source for hand-held communication equipment, cameras, and VCRs
- Power source for home appliances
- Power source for battery-powered equipment

TYPICAL CHARACTERISTIC

RP108J251x Dropout Voltage vs. Output Current



Low Voltage 3A LDO Regulator with Ext. V_{OUT} Adjustable

Technical Information on Ricoh LDO Regulators

Low supply current and high performance by CMOS process

RP108J is high output current of 3A. It has been low supply current (Typ.350mA) because it is CMOS manufacturing process. It has become the supply current of less than one tenth compared to other bipolar high current regulators. The low dropout voltage is 0.51V and is significantly lower than bipolar regulators.

Good Load Regulation

RP108J is less affected by the output current load because it separates the output voltage pin and the feedback voltage pin. So, RP108J is very good load regulation, the load regulation is TYP.3mV (I_{OUT}=3A)

Reverse Current Protection Circuit

The Reverse Current Protection Circuit stops the reverse current if the reverse detector detects that the V_{OUT} pin voltage has become higher than the V_{DD} pin voltage.

In the RP108J series the reverse current (I_{REV}) is restricted to Max 10μA. (When V_{OUT} ≥ 0.5V and 0V ≤ V_{IN} ≤ 5.25V)

Constant Slope Circuit

Some products have a Constant Slope Circuit as a function which prevents the overshoot of the output voltage.

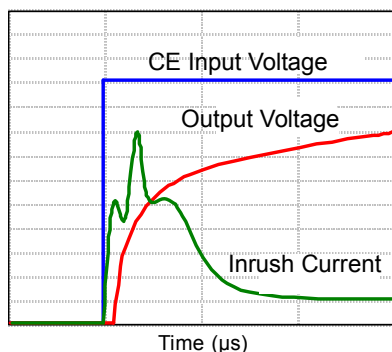
The constant slope is a kind of soft-start circuit which allows the output voltage to start up gradually. The capacitor to create the start-up slope is built-in the IC that doesn't require any external components. The start-up time and start-up slope angle are fixed inside the IC.

If the capacitance of the external output capacitor becomes more than the certain capacitance, the output current limit circuit minimizes the incoming current of the output capacitor at the start-up. As a result, the start-up time becomes longer and the start-up slope angle becomes more gentle.

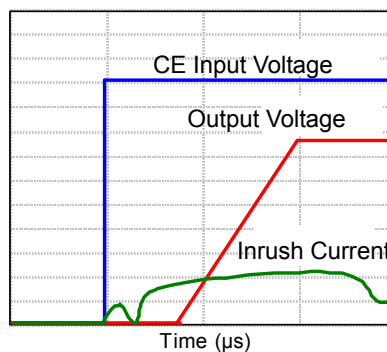
The constant slope circuit is an especially effective function for large current product like 3A output, because driver's ability is high, and it allows a large current to flow at the start-up.

Inrush current limit circuit of conventional products

(Imaginary graph)



Constant Slope Circuit



Ricoh Co.,LTD. Electronic Devices Company



■ Ricoh presented with the Japan Management Quality Award for 1999.
Ricoh continually strives to promote customer satisfaction, and shares the achievements of its management quality improvement program with people and society.



■ Ricoh awarded ISO 14001 certification.
The Ricoh Group was awarded ISO 14001 certification, which is an international standard for environmental management systems, at both its domestic and overseas production facilities. Our current aim is to obtain ISO 14001 certification for all of our business offices.



Ricoh completed the organization of the Lead-free production for all of our products. After Apr. 1, 2006, we will ship out the lead free products only. Thus, all products that will be shipped from now on comply with RoHS Directive.

<http://www.ricoh.com/LSI/>

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